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Farmland biodiversity and agricultural management on 237 farms in 13 European and 2 African regions

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Abstract

Farmland is a major land cover type in Europe and Africa and provides habitat for numerous species. The severe decline in farmland biodiversity of the last decades has been attributed to changes in farming practices, and organic and low-input farming are assumed to mitigate detrimental effects of agricultural intensification on biodiversity. Since the farm enterprise is the primary unit of agricultural decision making, management-related effects at the field-scale need to be assessed at the farm level. Therefore, in this study, data were collected on habitat characteristics, vascular plant, earthworm, spider and bee communities and on the corresponding agricultural management in 237 farms in 13 European and 2 African regions.

In 15 environmental and agricultural homogeneous regions, 6 – 20 farms with the same farm type (e.g. arable crops, grassland or specific permanent crops) were selected. If available, an equal number of organic and non-organic farms were randomly selected. Alternatively, farms were sampled along a gradient of management intensity. For all selected farms, the entire farmed area was mapped, which resulted in total in the mapping of 11,338 units attributed to 194 standardized habitat types, provided together with additional descriptors. On each farm, one site per available habitat type was randomly selected for species diversity investigations. Species were sampled on 2,115 sites and identified to the species level by expert taxonomists. Species lists and abundance estimates are provided for each site and sampling date (one date for plants and earthworms, three dates for spiders and bees). In addition, farmers provided information about their management practices in face-to-face interviews following a standardized questionnaire. Farm management indicators for each farm are available (e.g. nitrogen input, pesticide applications or energy input).

Analyses revealed a positive effect of unproductive areas and a negative effect of intensive management on biodiversity. Communities of the four taxonomic groups strongly differed in their response to habitat characteristics, agricultural management and regional circumstances.

The data has potential for further insights into interactions of farmland biodiversity and agricultural management at site, farm and regional scale.

Key words:

agricultural management; arable crop; bee; BioBio; earthworm; grassland; habitat diversity; permanent crop; spider; Tunisia; Uganda; vascular plant

The complete data set is available online at: [*to be completed at proof stage*].

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